January 1974

Blood and Tissue Identification of Selected Birds and Mammals, Part 2

David W. Oates
Nebraska Game and Parks Commission

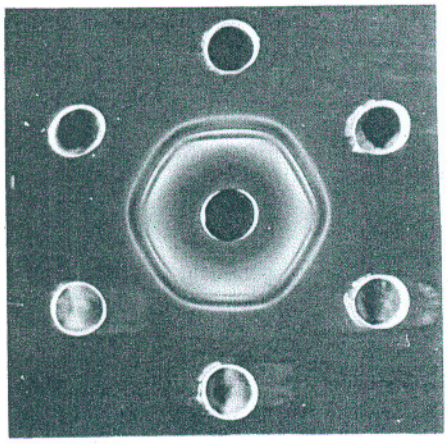
Craig W. Brown
Nebraska Game and Parks Commission

Debra L. Weigel
Nebraska Game and Parks Commission

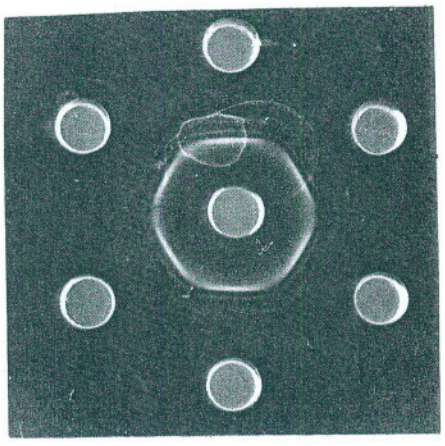
PROTEIN PATTERNS

The following electrophoresis patterns are the results of reacting serum, dried blood extract, or tissue extract with an antiserum for that species prepared by injection of serum into a domestic rabbit. The extracts were prepared using physiological saline (0.85% NaCl). An ultrasonic cleaner facilitated putting dried blood in solution. Frozen tissue was homogenized with saline in a Virtis blender. In both cases, samples were centrifuged before application to the agar slide.

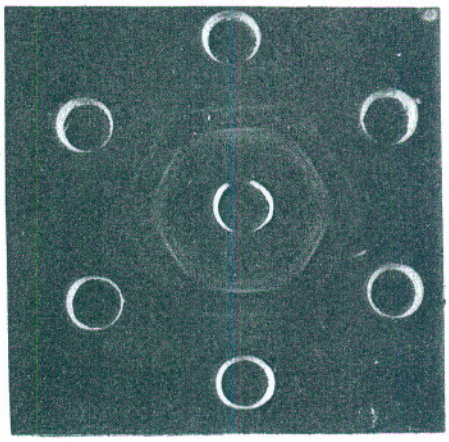
Two immuno techniques were initially employed to determine characteristic protein patterns. Ouchterlony double diffusion was one of the techniques utilized. Due to the gross similarities between patterns, they will not be included (see Figure 14). This technique will be employed intensively in the study of cross-reaction patterns.



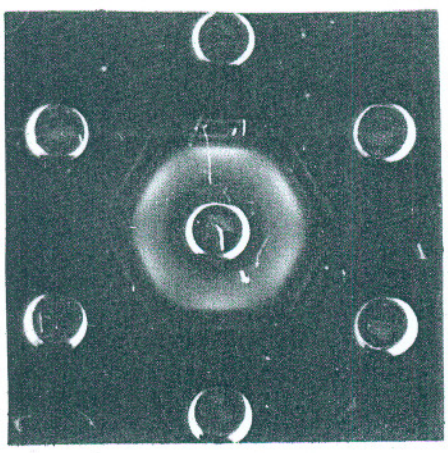
Fox antiserum versus fox meat extract



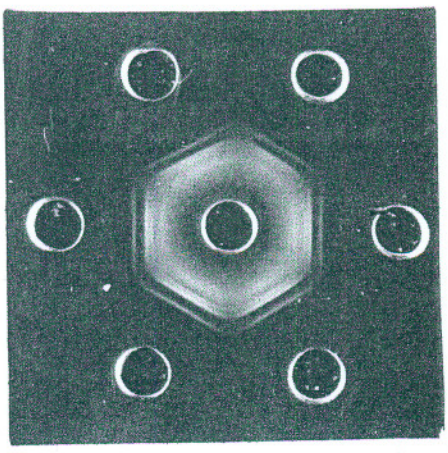
Mink antiserum versus dry mink blood



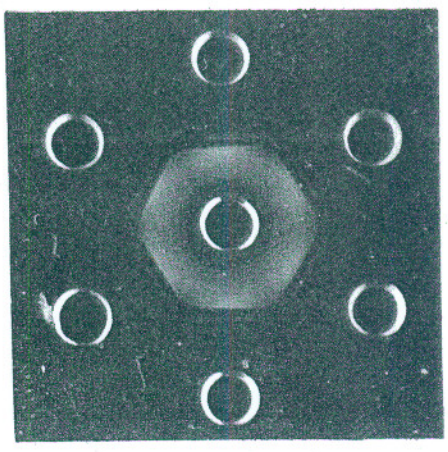
Porcine antiserum versus dry pig blood



Sheep antiserum versus dry sheep blood



Golden eagle antiserum versus golden eagle dry blood



Deer antiserum versus dry deer blood

Figure 14. Examples of similar patterns obtained with Ouchterlony double diffusion.

Characteristic protein patterns using immuno electrophoresis are presented in Figures 15 and 16. Patterns run in other laboratories may differ from ours due to several variables. These include differences between individuals of the same species, ability of various rabbits to produce antiserum, agar concentration, antiserum titer, electrophoresis time, time allowed for diffusion, lab technique, etc.

More species may be added to this series as they become available, but for forensic purposes cross reactions may be of more importance.

Mammals

Antelope	*Antilocapra americana*
Badger	*Taxidea taxus*
Beaver	*Castor canadensis*
Bobcat	*Lynx rufus*
Buffalo	*Bison bison*
Cat (domestic)	*Felis catus*
Cow	
Coyote	*Canis latrans*
White-tailed Deer	*Odocoileus virginianus*
Dog	*Canis familiaris*
Elk	*Cervus canadensis*
Red Fox	*Vulpes vulpes*
Human	*Homo sapiens*
Mink	*Mostela vison*
Opossum	*Didelphis marsupialis*
Pig	
Porcupine	*Erethizon dorsatum*
Prairie Dog	*Cynomys ludovicianus*
Raccoon	*Procyon lotor*
Bighorn Sheep	*Ovis canadensis*
Sheep (domestic)	
Striped Skunk	*Mephitis mephitis*

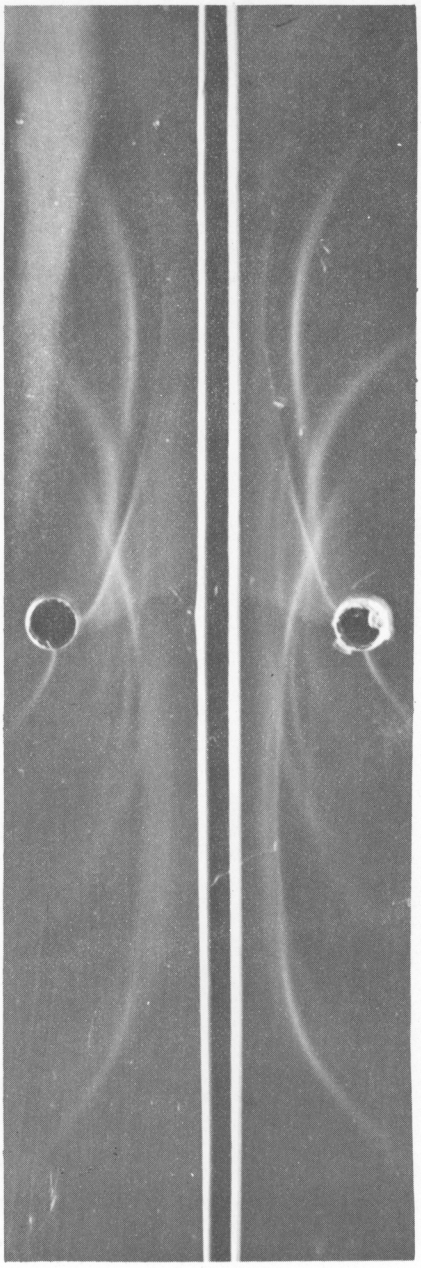
Birds

Chicken	
Mallard Duck	*Anas platyrhynchos*
Golden Eagle	*Aquila chrysaetos*
Snow Goose	*Chen hyperborea*
Screech Owl	*Otus asio*
Ring-necked Pheasant	*Phasianus colchicus*
Pigeon	*Columba livia*
Turkey	*Meleagris gallopavo*

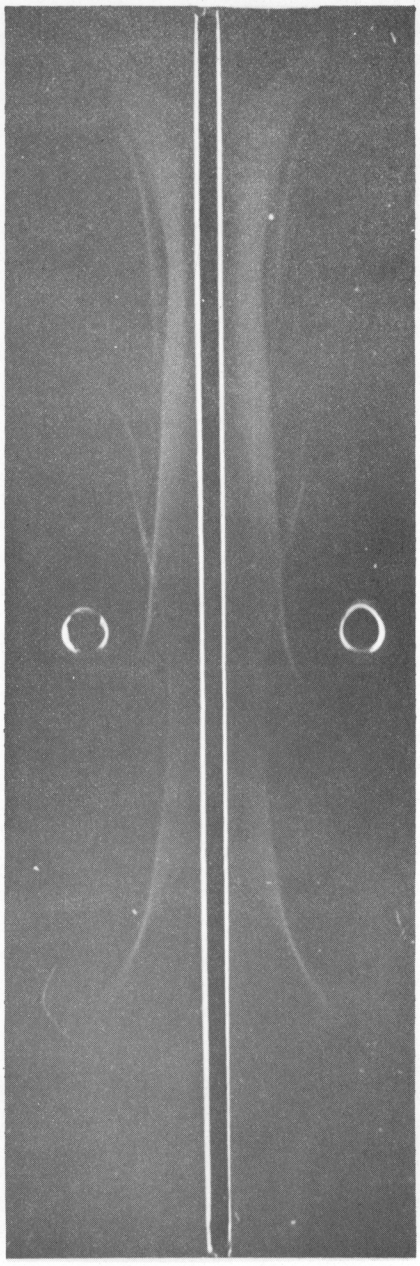
Slides shown are reproduced approximately three times normal size.

Figure 15. The following photographs illustrate the protein patterns formed by reactions to serum antiserum for meat, dry blood, and serum from various species of mammals.

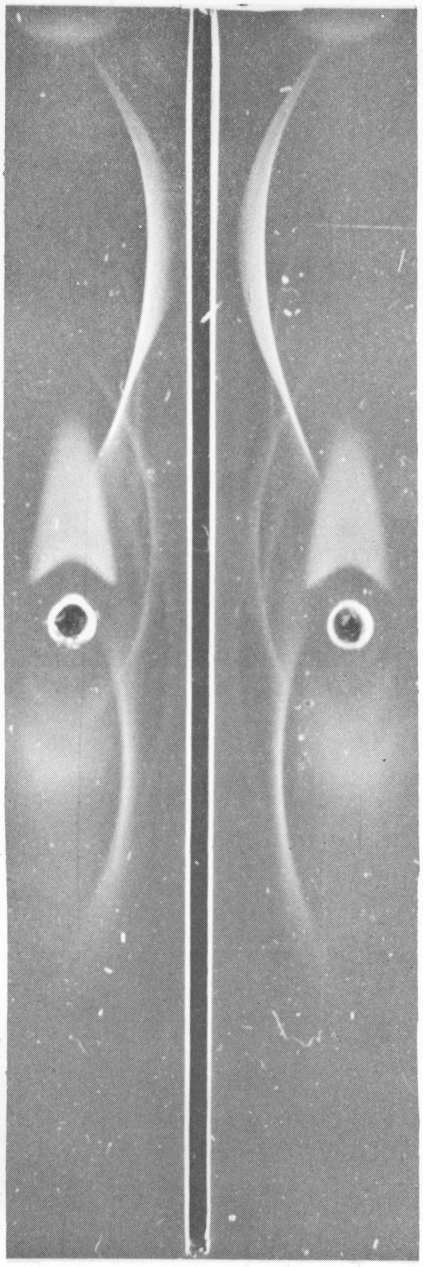
ANTELOPE *(Antilocapra Americana)*



Serum

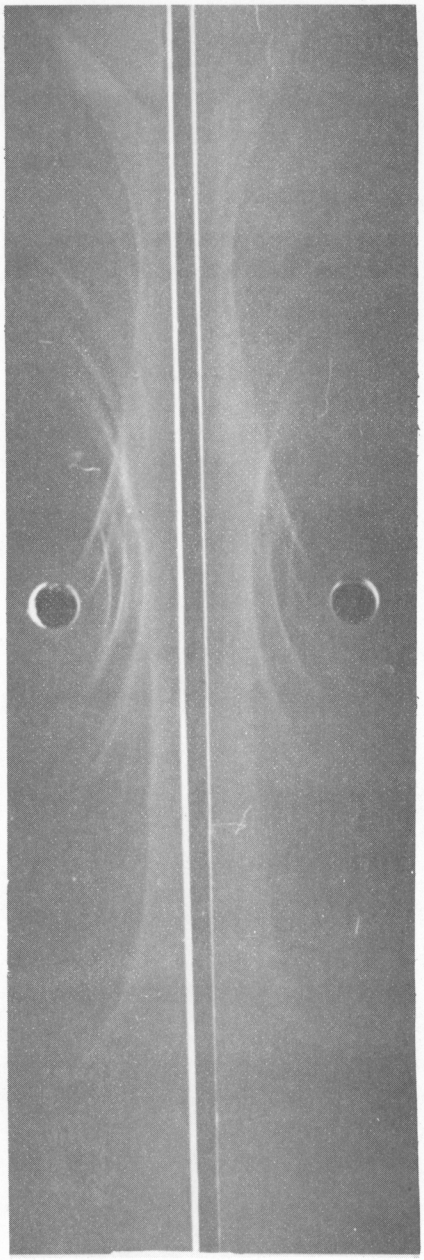


Dry Blood

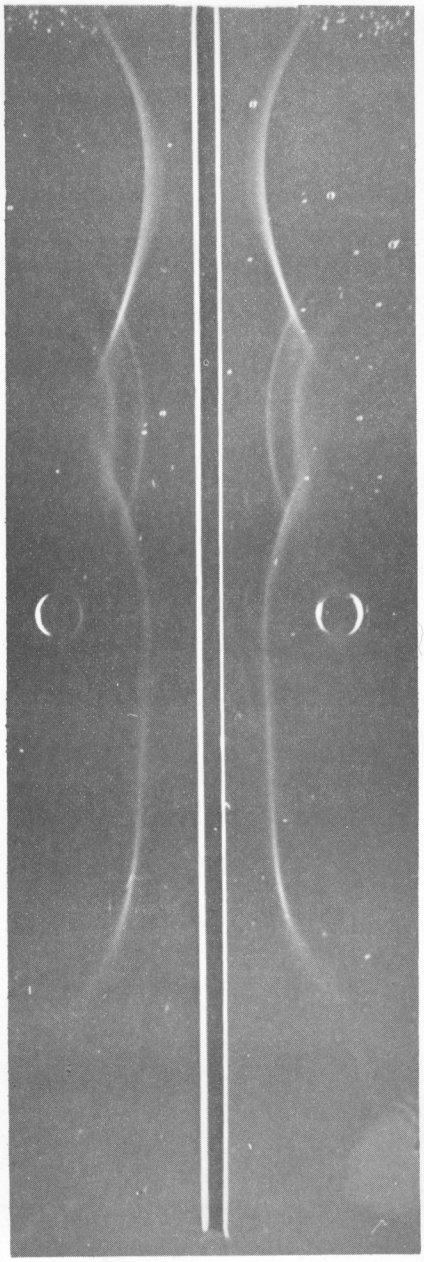


Meat

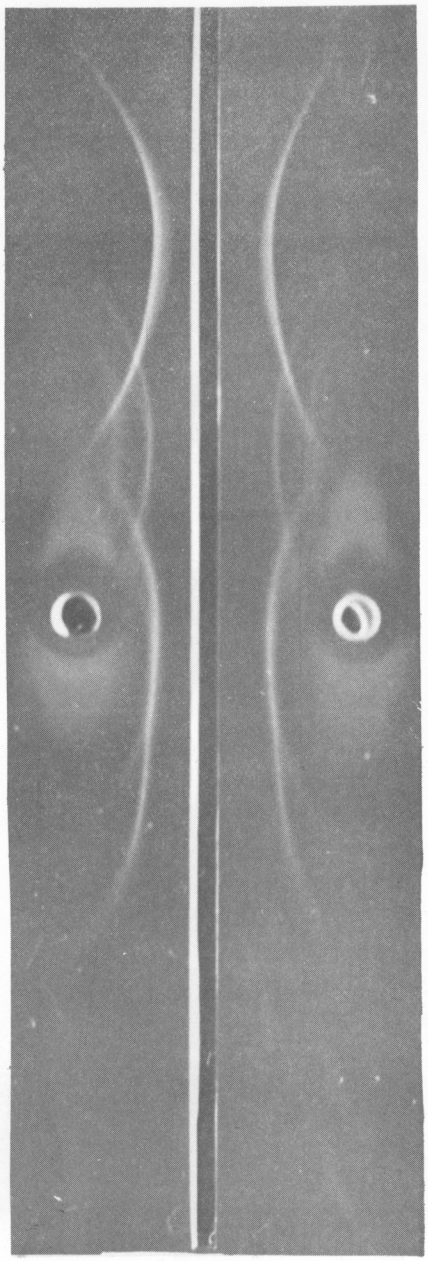
BADGER *(Taxidea taxus)*



Serum

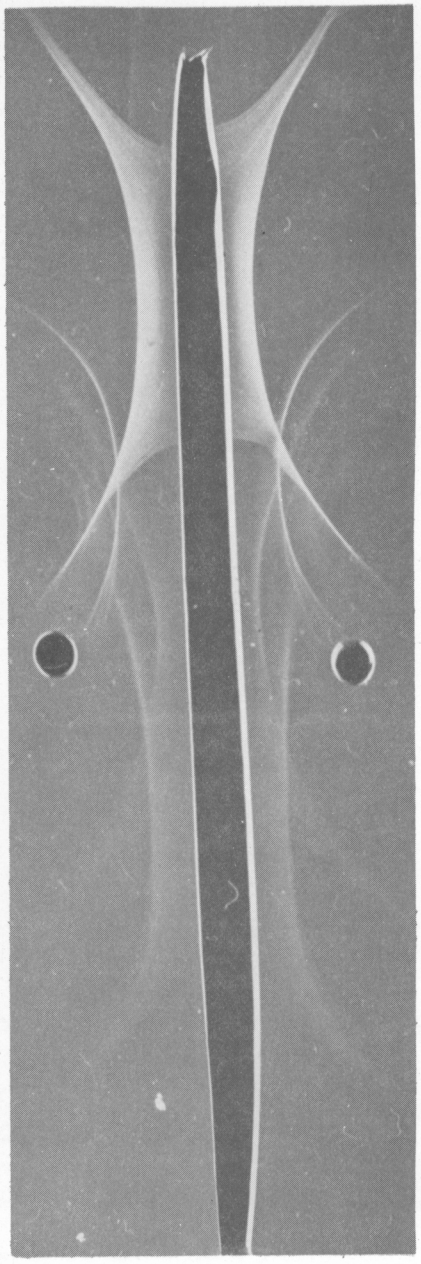


Dry Blood

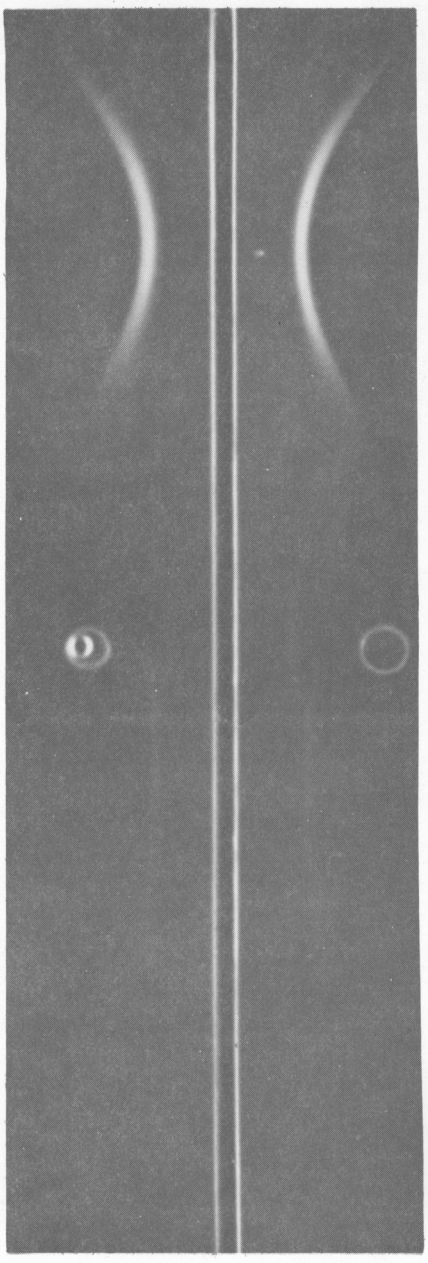


Meat

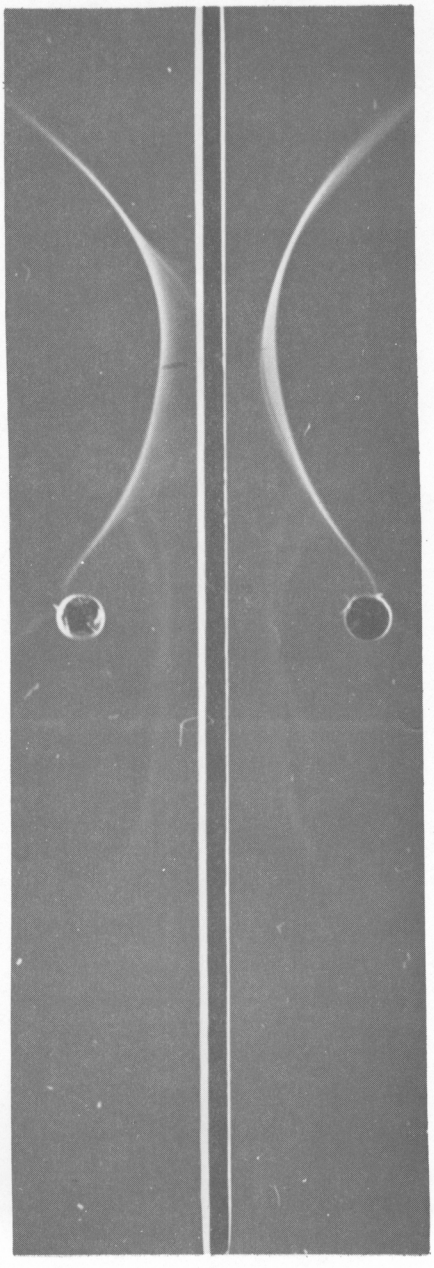
BEAVER *(Castor canadensis)*



Serum

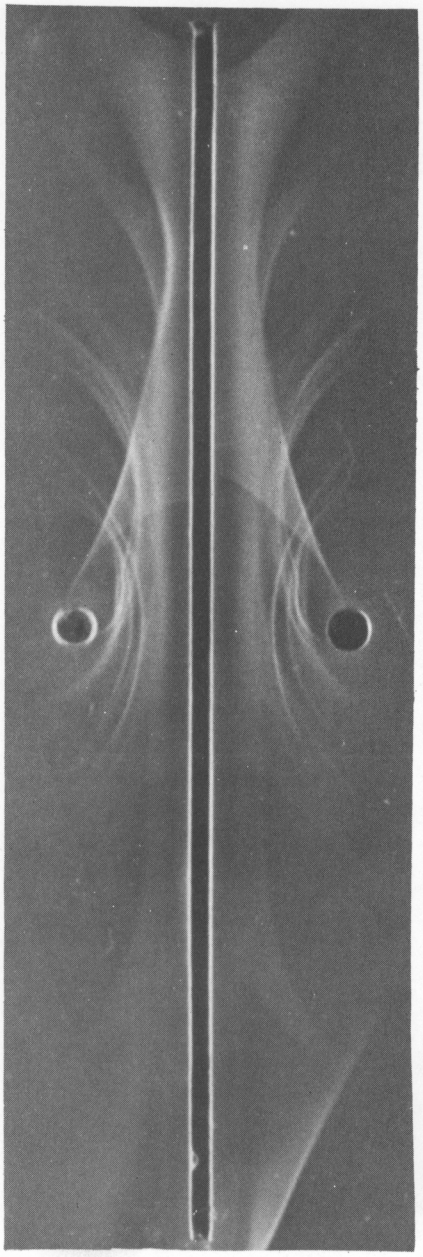


Dry Blood

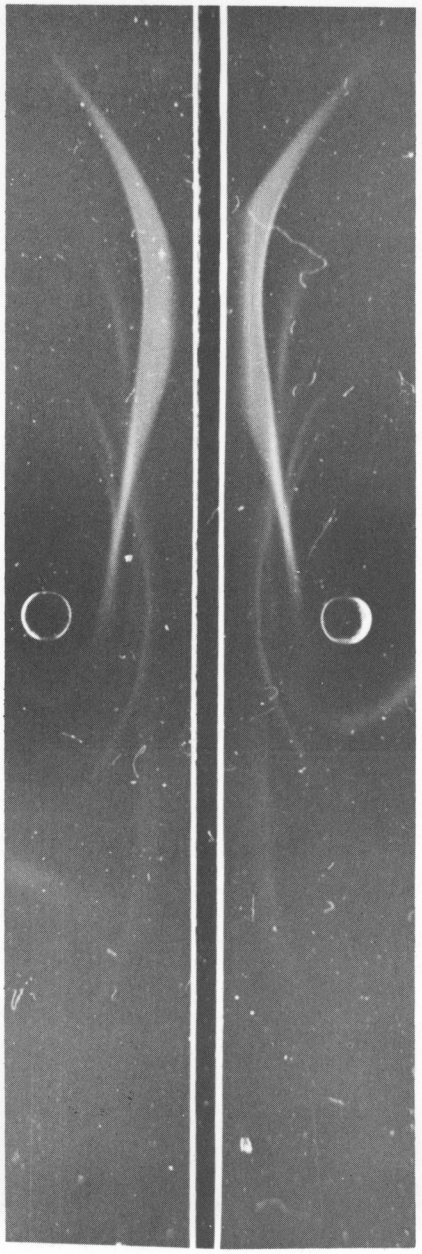


Meat

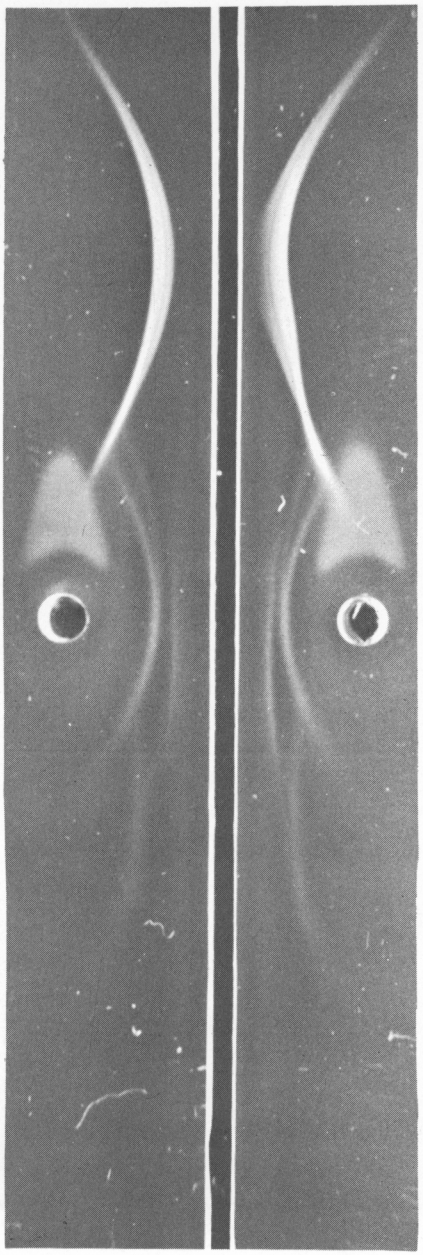
BOBCAT *(Lynx refus)*



Serum

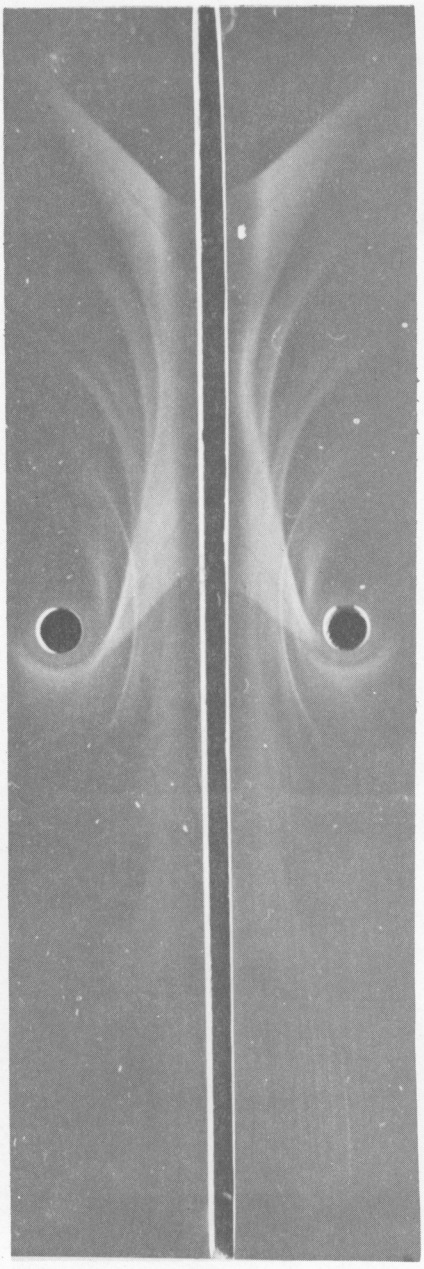


Dry Blood

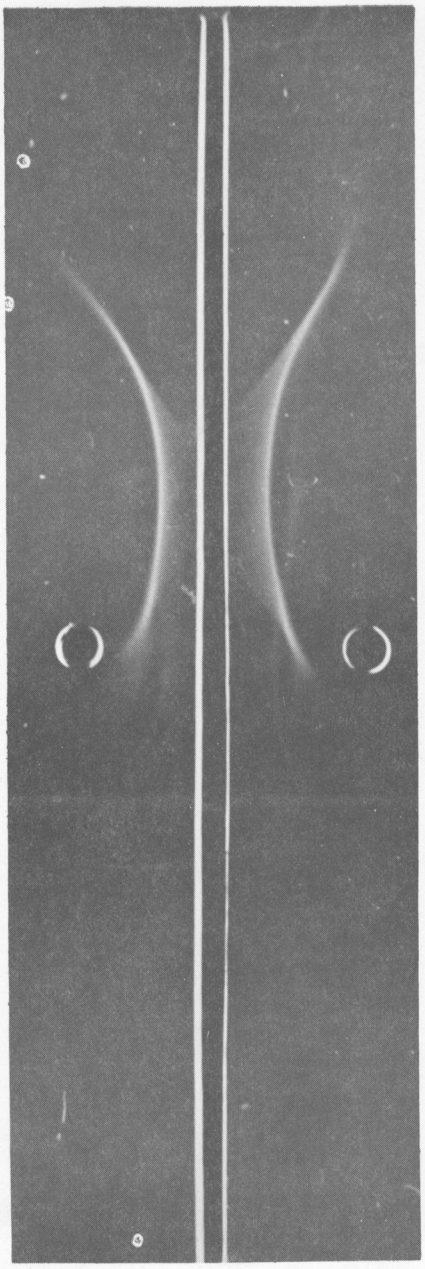


Meat

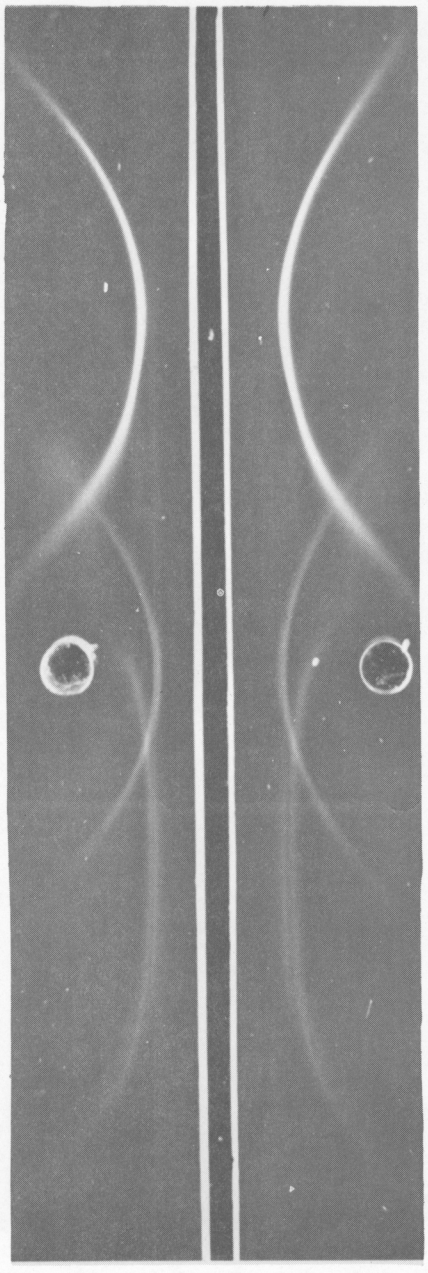
BUFFALO *(Bison bison)*



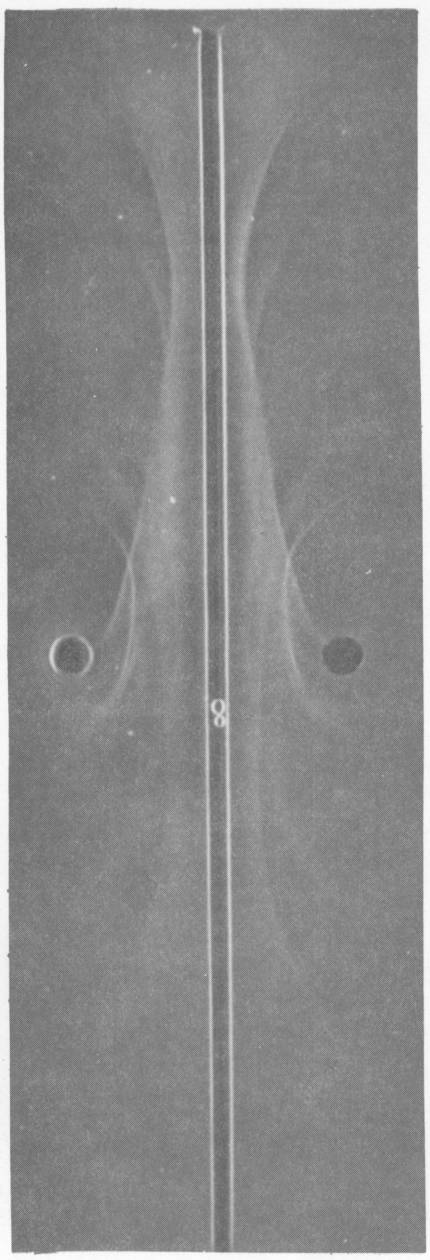
Serum



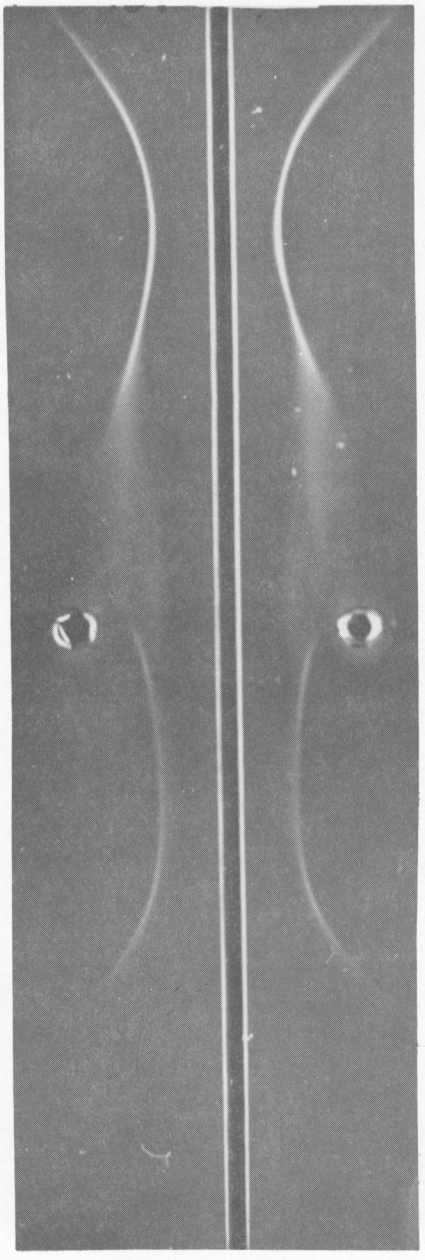
Dry Blood



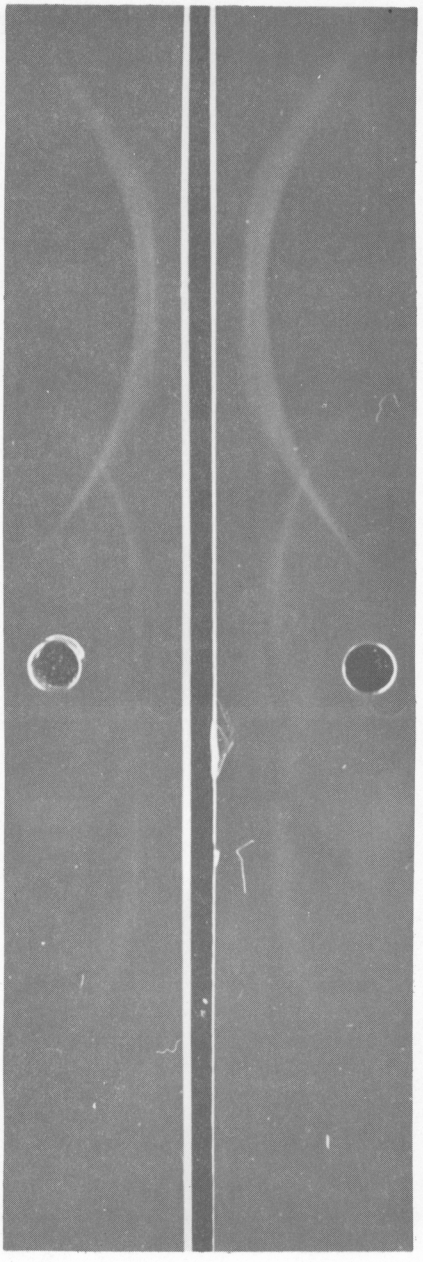
Meat



Serum

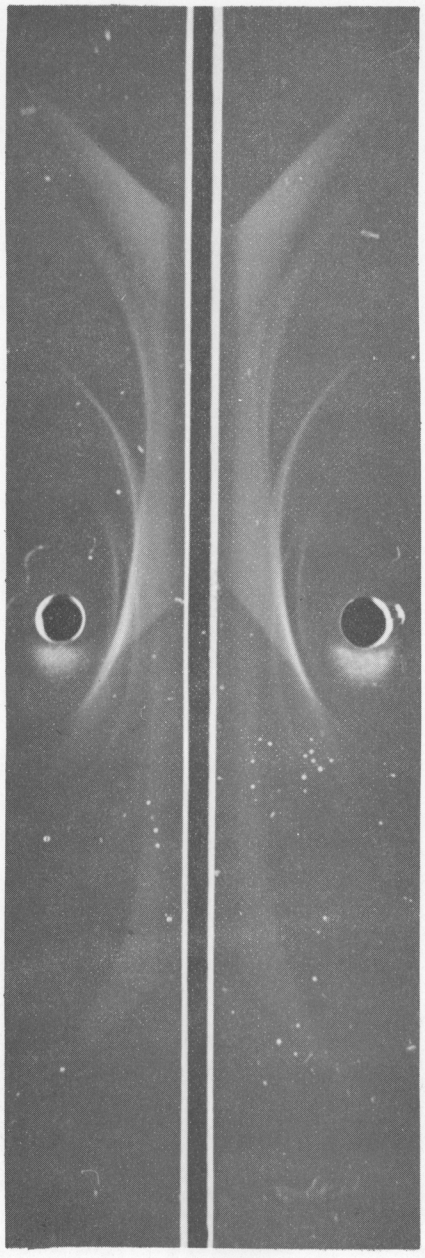


Dry Blood

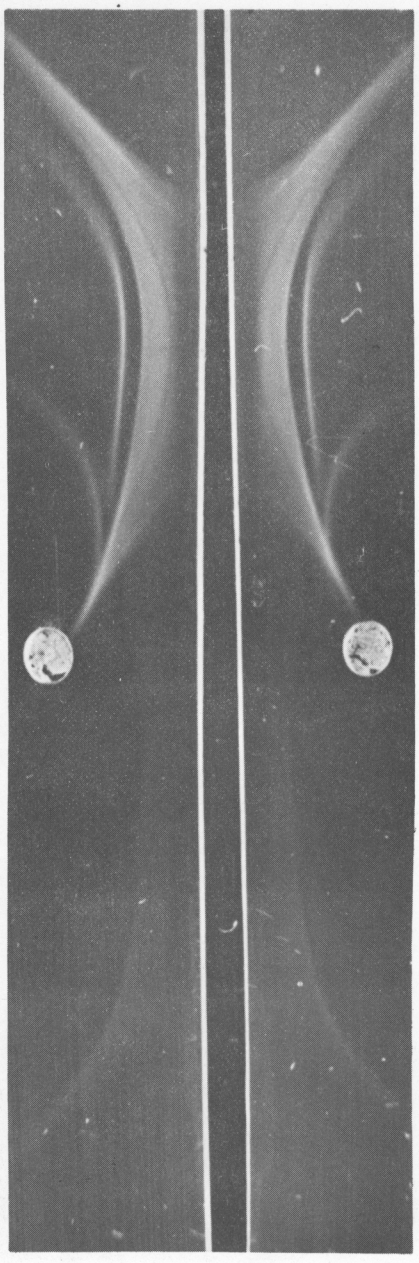


Meat

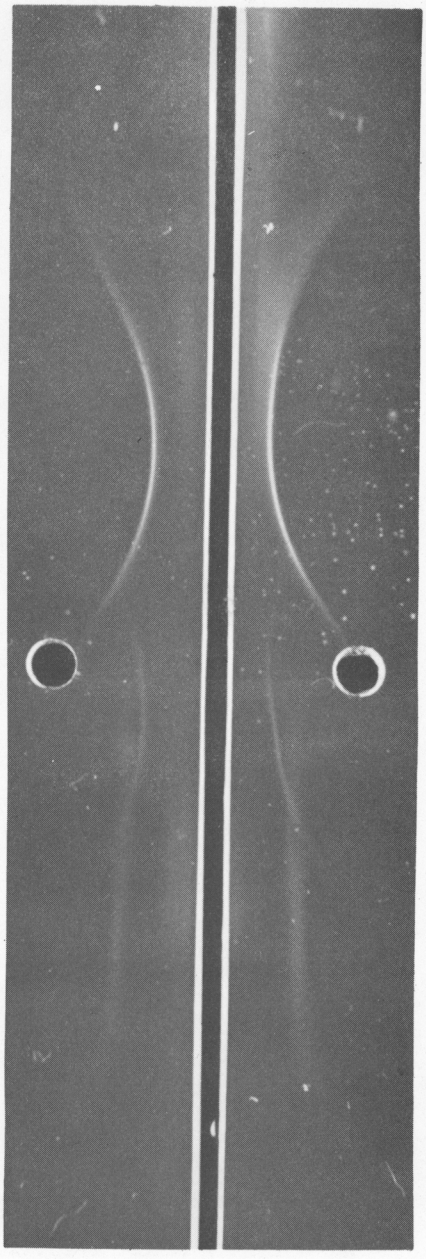
COW



Serum

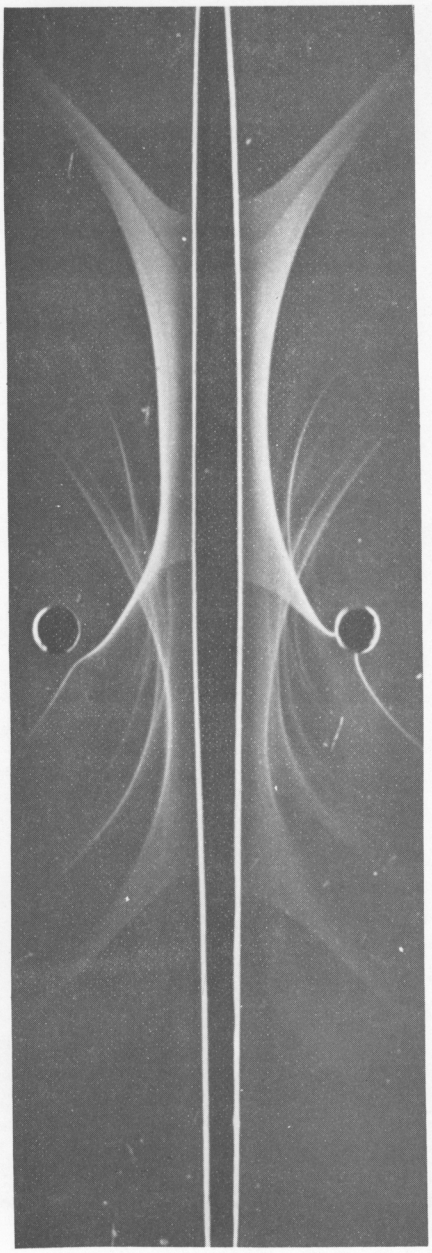


Dry Blood

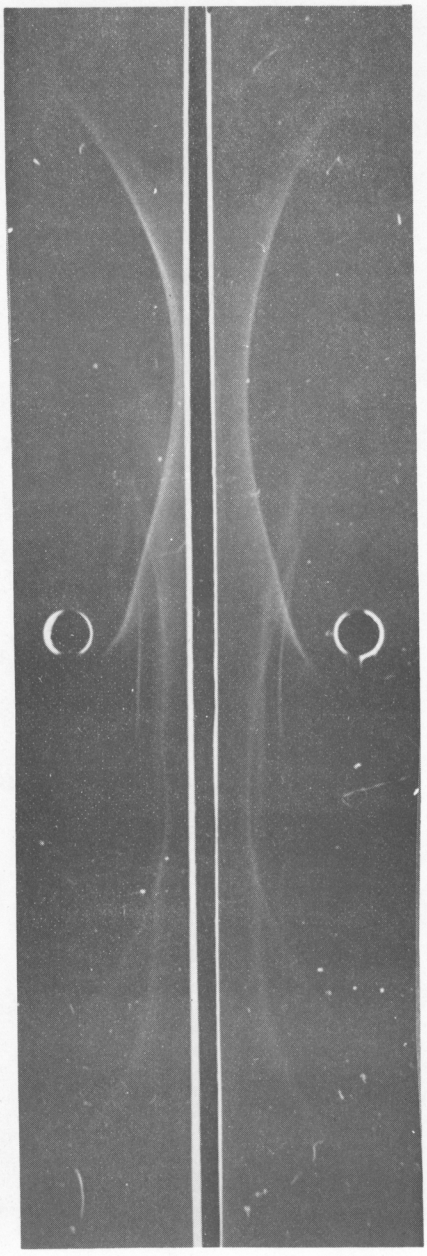


Meat

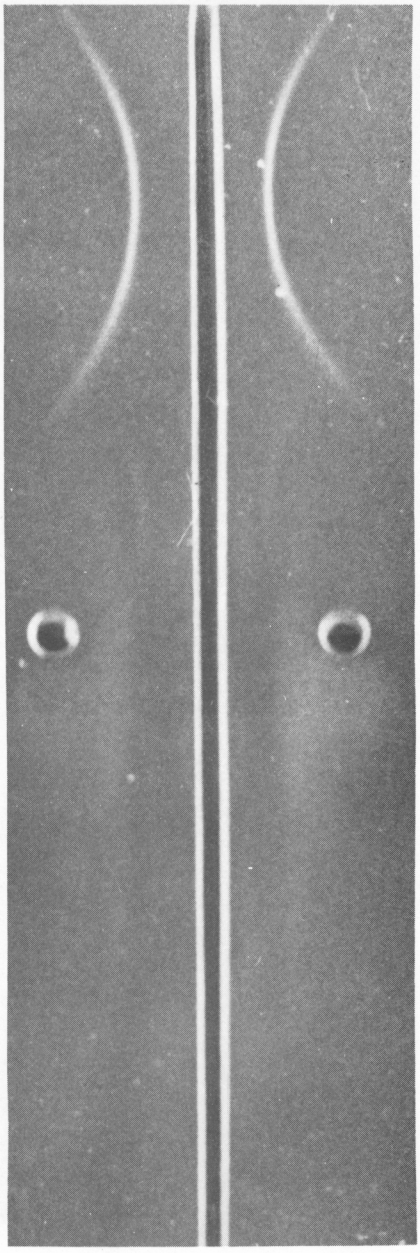
COYOTE *(Canis latrans)*



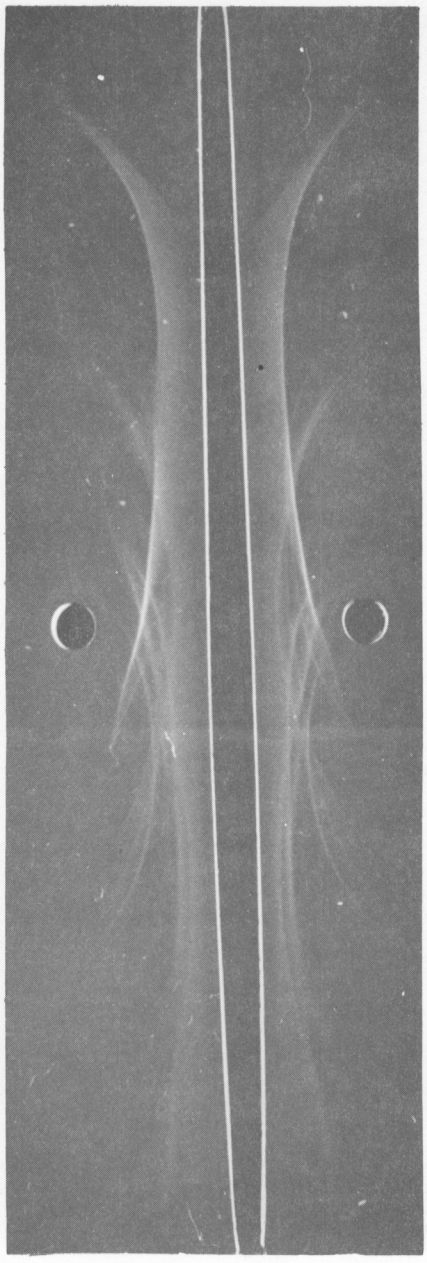
Serum



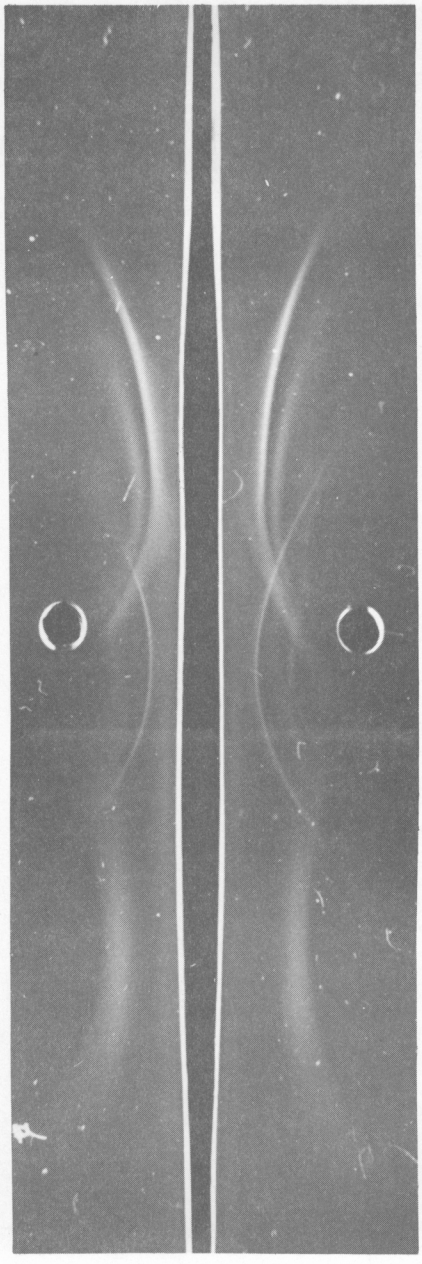
Dry Blood



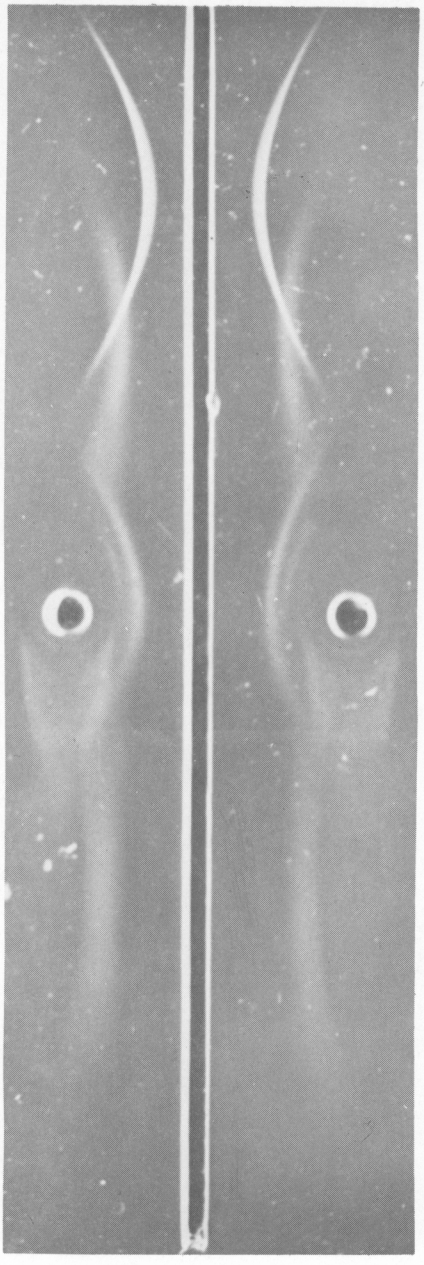
Meat



Serum



Dry Blood



Meat